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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,869	03/01/2002	Quinn K. Tong	1988.EEM	7273

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EXAMINER

BUTTNER, DAVID J

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 01/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/084,869

Applicant(s)

TONG ET AL.

Examiner

David Buttner

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-14 and 16-30 is/are rejected.
- 7) ☒ Claim(s) 7, 8 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Claims 3-10,12,13,23,30 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3's "bisphenol A resin" and "bisphenol F resin" are not thermally curable without some other groups present. Furthermore, these two species are not the epoxidized resins required by claim 2.

Claim 12 and 13's "propylene glycol methyl ethyl acetate" is an unknown compound to the examiner. Applicant's response must provide a reference to show the formula for this compound.

Claims 23 is directed to an encapsulant (i.e. a composition), but goes on to describe some coated wafer. The claim cannot be an "encapsulant" claim and a "coated wafer" claim. One is a composition while the other is a structure. Which is intended?

Is the Markush group of claim 6 and 30 a selection of adducts or anhydrides? If the list is intended to be the possible anhydrides, why are imidazoles listed? If the Markush group is intended to be a list of possible adducts, then none of the members are complete imidazole-anhydride adducts. "Onium borate" is neither an anhydride nor an imidazole.

Claims 1-6, 9-12,14 and 16-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Shi '896 Patent in view of DD 218377 or J07224153.

Shi discloses underfill material for flip chips (abstract). The material contains epoxy, hardener such as anhydride, curing catalyst, fluxing agent, solvent and

surfactant (col. 3 line 11-35). The catalyst can be imidazole and its derivatives (col. 3 line 20). Shi does not suggest using an imidazole-anhydride adduct.

Imidazole-anhydride adducts have good storage stability (see DD218377 and J07224153).

It would have been obvious to use a Imidazole-anhydride adduct as Shi's catalyst because Shi calls for both imidazoles and anhydrides in his composition. The adduct will avoid premature cure.

Claims 1-6,9-14 and 16-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Shi '896 Patent in view of DD 218377 or J07224153 in further view of Gilleo '776.

Shi/DD'377/J'153 as discussed above does not suggest applicant's preferred solvent.

Gilleo (col. 8 line 32, 45) shows similar material can be solvated with methoxypropyl acetate.

It would have been obvious to use any common solvent in Shi's underfill material. The solvent has no significant effect on the final article.

Claims 1-6, 9-12,14 and 16-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Shi '896 Patent in view of DD 218377 or J07224153 in further view of Konarski '472.

Shi /DD'377/J'153 as discussed above suggests epoxy diluents (col. 5 line 55 of Shi) but doesn't name applicant's preferred diluents.

Konarski (col 8 line 20-38) lists epoxy diluents for similar underfill compositions.

It would have been obvious to use any common epoxy diluent as the diluent called for by Shi.

Claims 7,8 and 31 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

An adduct using this particular anhydride not believed to be suggested by the art of record.

Applicant's arguments filed 12/9/04 have been fully considered but they are not persuasive.

Applicant argues bisphenol A and F are thermally curable with the claimed adduct.

Epoxidized versions of bisphenol A and F are believed to be thermally curable. A phenolic group generally does not cure with other phenolic groups. Without being epoxidized (or given some other functionality), bisphenol A will not "cure" with itself.

Applicant has not amended the name of the preferred solvent.

Applicant argues Shi requires an anhydride curing hardener while applicant does not.

This is not convincing. Applicant's "comprising" allows for any other ingredients. Presumably, applicant's adduct releases some anhydride during cure anyway. The anhydrides of applicant's adduct are the same as Shi's anhydride curing hardener.

Applicant argues the present invention's strongly acidic fluxing agents would have been expected to destabilize the adduct causing premature cure.

Applicant has not pointed out any prior art that predicted such destabilizing effects. Secondly, the fluxing agents of Shi and applicant need not be strongly acidic. Both suggest ethylene glycol as a flux. Applicant's arguments regarding viscosity are not understood. The cited viscosities are all operable according to applicant's specification.

Arguments regarding the additional film layer adjacent to Shi's underfill are irrelevant to the claims under examination. Most are composition claims. Where the references place their compositions have no bearing on the patentability of the claimed composition. Applicant fails to specifically point out which method limitation excludes the additional film layer utilized by Shi.

Gilleo is relied on merely to identify particular solvents for epoxy compositions containing flux. What Gilleo terms his composition (flux or underfill) does not detract from the proposed rejection.

Applicant argues the inclusion of the comonomer reactive diluents of Konarski will result in premature curing (last page of response 12/9/04).

The examiner included Konarski due to applicant's claim 22. Now applicant has admitted inclusion of claim 22's reactant diluents will destroy the invention. Claim 22 (as well as "reactive diluent" in claims 1,20-21,24) are therefore **REQUIRED TO BE CANCELLED** with the next response.

The terminal disclaimer removes the obviousness double patenting rejection.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Buttner whose telephone number is (571) 272-1084. The examiner can normally be reached on Weekdays from 10:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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DAVID J. BUTTNER
PRIMARY EXAMINER

D. Buttner
January 3, 2005

David Buttner